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ABSTRACT

Changes that occur within the belief systems of student teachers were investigated with respect to changes in authoritarianism, dogmatism or open/closed-mindedness, Machiavellianism, and values. Participants were 173 Central Michigan University elementary and secondary education majors. The control group consisted of 56 education majors; the experimental group, 117. The two groups were equivalent except for the experiment treatment under study--student teaching. Instruments included the California F-scale, forced-choice short form; the Rokeach Value Survey, Form E; the Mach IV Scale; and the Dogmatism scale. Following analysis of both pre- and posttest data, results indicated that students were significantly more Machiavellian at the end of the 16-week period, while a de-emphasis of personal competency values was observed. A 19-item bibliography and tabular materials are included. (MJM)

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BELIEF SYSTEM CHANGE IN STUDENT TEACHERS[1]

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The recent shift in the job market picture for the newly graduated education major has encouraged teacher preparation institutions to be more critical of the effects of the student teaching experience. Traditionally, such evaluation has been attempted using standardized teacher competency scales. However, use of such measures may give an incomplete or even misleading assessment of the laboratory experience, due, in part, to the subjective nature of these measures.

To avoid this pitfall, the authors have chosen to examine the effects of the student teaching experience employing generalized social psychological measures which eliminate the necessity for one individual (i.e., the supervising teacher) to rate or perceive another (i.e., the student teacher).

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Central Michigan University's teacher preparation program places the student with a supervising teacher in the appropriate level and subject area for approximately 16 weeks, during which time the student assumes an increasingly greater degree of responsibility for the class. After an appropriate period of time, the student teacher has accepted virtually all of the regular teacher's responsibilities: planning, classroom management, evaluation, etc.

It is not unreasonable to assume that this is an extremely important period in the life of the student teacher. His career may well depend

upon his performance during the student teaching experience. More importantly, the process of confronting the student's own conceptions of the educational process and the role of the teacher with the realities and demands of actual teaching may have a profound influence upon the student.

The present study was designed to investigate the possible changes that occur within the belief systems of student teachers; in particular, changes in authoritarianism, dogmatism or open-closed-mindedness, Machiavellianism, and values.

VALUES AND VALUE SYSTEMS

Rokeach (1973) states that

> A value is an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite mode of conduct or end-state of existence.

Each individual's values are organized into a value system,

> . . . an enduring organization of beliefs along a continuum of relative importance concerning preferable modes of conduct or end-states of existence.

To Rokeach, values are the fundamental unit of an individual's conceptual framework through which he evaluates, makes comparisons, and bases his decisions.

> A person's value system may thus be said to represent a learned organization of rules for making choices and for resolving conflicts--between two or more modes of behavior or between two or more end-states of existence. (1968, p. 161)

All human beings possess, to a greater or lesser extent, the same values. The primary distinction between value systems is the relative importance placed upon the particular values.

The instrument Rokeach designed to measure values is called the Value

Survey (1971c). It contains two lists of eighteen values each: terminal values such as a comfortable life, a world at peace, and inner harmony, which represent end-states of existence; and instrumental values such as courageous, clean and honest, or modes of conduct. The value names (along with short defining phrases) are printed on gummed labels, which the respondent is asked to rank "in order of their importance to YOU, as guiding principles in YOUR life."

Rokeach and others have done extensive research relating the Value Survey to a wide range of demographic (Rokeach and Parker, 1970; Homant and Rokeach, 1970; Rokeach, 1968), attitudinal (Rokeach, 1968, 1971a, 1971b) and behavioral (Rokeach, 1971a) factors, both in correlational and long-range studies. In general, the Value Survey seems to be both a reliable and valid measure of values and value systems.

VALUES AND ATTITUDES

Rokeach (1968) has pointed out that the tremendous number of studies of attitude change and structure has resulted in a superficial and sometimes contradictory knowledge of attitudes but has not led to any satisfactory conception of the role of these attitudes in determining behavior. He therefore proposes that the primary focus of social psychology should be the concept of value. He argues that values are a more powerful and efficient explanatory concept than attitudes, since a) values are more fundamental components of the individual's belief system, b) values are determinants of attitudes as well as of behavior, c) there are relatively few different values and that these values are organized hierarchically into value systems, while attitudes are relatively numerous and unorgan-

ized, and d) values are more dynamically related to overt behavior.

Rokeach (1971a) has demonstrated the apparent validity of these points in his own research. Through a brief experimental treatment aimed at presenting the subject with information showing his attitudes and values to be inconsistent, he has induced attitudinal, value and behavioral change in college students that is still significantly present as long as 21 months afterward.

The implications of Rokeach's value and attitude change work for education and educators are obvious. If educators can select certain attitudes and values that they deem important, it seems possible that they might be able to induce change in their students in teacher training programs in the direction of emphasizing these particular values and attitudes.

MACHIAVELLIANISM

Christie and Geis (1970) define Machiavellianism as a tendency to manipulate others. They point out that the manipulator a) is not concerned with morality in the conventional sense, b) that he is basically "cool" in interpersonal relationships, and that c) ideological persuasion is not related to manipulative tendency, since those who manipulate are primarily concerned with means rather than ends. Items in the Machiavellian, or "Mach," scale are drawn chiefly from Machiavelli's The Prince and The Discourses, and made relevant to contemporary society when necessary.

A variety of interesting correlative research using the Mach scale has been reported. Singer (1964) found a positive relationship between Mach score and grade point averages for male college freshman; Back (cited in Christie and Geis, 1970) found that medical students planning to special-

ize in psychiatry were significantly more Machiavellian than those interested in surgery. Milbrath (also cited in Christie and Geis) observed that Washington lobbyists who served more than one client scored higher on the Mach scale than those who had only one client.

To summarize these and other findings, it appears that "the greater the involvement of an individual in a complex of formalized role relationships with others, the greater the endorsement of manipulative tactics"; that high scorers on the Mach scale "seem to have greater success in meeting the demands of American society"; and that in laboratory situations, college students "succeeded in out-manipulating their partners roughly in proportion to their agreement with Machiavellian precepts."

What are the implications of Machiavellian, or manipulative behavior to education? Clearly, the teaching situation is one which often suggests or even demands manipulative tactics. Any number of plausible predictions concerning Machiavellianism and teaching present themselves for investigation. We might hypothesize that teachers are more manipulative than the general population, and that the student teacher would learn to use manipulative behaviors in order to succeed in managing his classroom.

AUTHORITARIANISM

Perhaps no other single work in the field of social psychology has stimulated so much discussion and research as The Authoritarian Personality (Adorno, et al., 1950). Kirscht and Dillehay (1967) list several hundred books and articles concerned with the problems presented and investigated by the California group. Research on the authoritarian syndrome suggests that individuals

possessing fascistic or pre-fascistic tendencies can be identified by certain cognitive and behavioral manifestations, among them a rigid adherence to conventional mores and ethics, along with a tendency to reject and punish those who violate these mores and ethics; a generalized hostility and cynicism in the individual; a predisposition to identify with authority- and power-figures; and an opposition to the subjective, imaginative, or tender-minded side of life.

A good deal of research has been done in an attempt to relate authoritarianism, or the F-scale, as the instrument constructed to measure this variable is known, to various aspects of education, and the results are far from conclusive. Shaver and Richards (1968) cite several such articles. Interestingly, the authors of the Minnesota Teacher Attitude Inventory (Cook, et al., 1951) indicated that the authoritarian personality has been generally accepted as an operational definition of the "poor teacher."

DOGMATISM

Dogmatism was formulated by Rokeach (1960) as an answer to the methodological and theoretical questions created by the F-scale. Basically, the dogmatism (D) scale was designed as a measure of general authoritarianism, as opposed to authoritarianism of the political right, which the F-scale apparently is tapping.

Rokeach views cognitive belief systems as having three major dimensions: a belief-disbelief dimension, a central-peripheral dimension, and a time perspective dimension. An "open" cognitive system is one in which belief and disbelief systems are not greatly isolated from each other, in which there is a relatively small degree of differentiation

between belief and disbelief systems, and in which there is a relatively high level of differentiation within the disbelief system. Central, or primitive beliefs, concerning the world in general, are generally favorable; concern with authority is more with the message than the source from which it emanates. Finally, the open-minded person possesses a relatively broad time perspective.

Contrast the above with the closed system, which rejects disbelief systems relatively strongly, has a high degree of isolation between and within belief and disbelief systems, and in which there is a relatively low level of differentiation within differing disbelief systems. Primitive beliefs are often threatening or unfavorable; concern with the source of messages from authority overrides that of the content of the message. Closed-minded persons usually present a relatively narrow future-oriented time perspective.

Rokeach summarizes these factors, stating that there is one basic characteristic by which we may judge whether an individual's cognitive system is open or closed: "the extent to which the person can receive, evaluate, and act on relevant information received from the outside on its own intrinsic merits, unencumbered by irrelevant factors in the situation arising from within the person or from the outside." (1960, p. 57) Clearly, open-mindedness is important to the teaching process, both in a theoretical and operational sense.

SUMMARY

Given these four measurements of belief system structure and content-values, authoritarianism, dogmatism, and Machiavellianism--how does the

student teacher change, if at all, during the course of his first teaching experience? Is there a cohesive pattern or framework to the changes within his belief system? The present research was designed as an explorative study to tentatively measure belief system change in student teachers as a result of their student teaching experience. If, for example, educators (cf. Cook et al., 1951) feel that the "good" teacher should not be authoritarian, do our teacher training programs in fact teach our students to be less authoritarian and more egalitarian?

Education has traditionally emphasized open-mindedness. Is this concern mirrored in our teacher preparation programs? Or is it merely given lip-service and swept aside when the day-to-day realities of training educators are met?

Are there certain values that are deemed desirable for teachers to emphasize? If so, what are they? Can we modify the relative importance that student teachers place upon these particular values, and induce them to de-emphasize other, less desirable values?

These are just a few of the questions the present research was designed to study. In general, studies of teacher training programs have concentrated on comparing the relative effectiveness of two different types of programs, using standardized teacher attitude tests as measurement criteria. We have attempted a rather different approach. Instead of using such scales as the Minnesota Teacher Attitude Inventory, which limits itself to questions of purely educational concern, we have employed standard social psychological measures in order to assess a wider range of belief system factors than is usual in educational research. As an added bonus, we gain the ability to compare our results for student

teachers on these scales with norms obtained by other researchers on samples varying in socio-economic status and other demographic variables.

METHOD

Subjects. A total of 173 Central Michigan University elementary and secondary education majors participated in the study. These were divided into two groups: A control group of 56 education majors enrolled in a required education course at the Mt. Pleasant campus, and an experimental group of 117 elementary and secondary education majors involved in their student teaching experience. Fifty-nine of these students were assigned by the Director of Student Teaching to CMU's Southeastern Michigan Student Teaching Center, while the remaining 58 were placed at the Flint Center. These assignments are generally made without regard to academic record or other achievement, the main consideration being the proximity of the student's home to his assigned teaching center.

None of the subjects in the control group had participated in the student teaching program. As far as was practical, the two groups were equivalent save for the experimental treatment under study--the student teaching experience.

A total of 19 students were dropped from the analyses due to incomplete questionnaires: three in the control group, six from the Southeastern Center, and ten from the Flint Center.

Instruments. The California F-scale, forced-choice short form (Berkowitz & Wolkon, 1964) was employed to measure authoritarianism. The Rokeach Value Survey, Form E (Rokeach, 1971c) was used to assess values and value systems. The Mach IV scale (Christie and Geis, 1970) was used

to give a measure of Machiavellian or manipulative tendencies; the Dogmatism scale, 20-item short form (Trodahl and Powell, 1965) was given to measure open-mindedness.

Procedure. Students in the on-campus (control) group were given the four instruments along with questions concerning basic demographics by their instructor in the required education class both at pre-test and post-test. Off-campus (experimental) students completed the questionnaires in groups of 15 to 30 each, supervised by their center's coordinator. Complete anonymity of responses were assured in all cases; it was emphasized that none of the information on the questionnaire would go into the student's records.

The following order of presentation was used both at pre- and post-test: Demographics, Value Survey, F-scale and Dogmatism and Mach IV scales. These last two scales were combined in the questionnaire since they both were scored in a seven-point Likert format.

The pretest was administered to both experimental and control subjects at the beginning of the semester, prior to the actual involvement of the student teacher in teaching responsibilities. Posttest questionnaires were administered to both groups approximately 16 weeks later, at the end of the teaching experience. Both pretest and posttest questionnaires were given over a one-week span.

RESULTS

Originally, the design of this study called for separate analyses of data from the two different teaching centers. However, the results are so similar that they have been pooled for all analyses.

Pretest data. Table 1 shows pretest means for experimental and control groups on F, D, and Mach. All pretest differences were tested for significance using the t-test for independent groups (Winer, 1962); the groups are statistically equivalent on these three measures.

Pretest medians and composite rank orders for values for experimental and control groups are presented in Tables 2 and 3. Due to the non-parametric nature of the data from the Value Survey, the Median Test for k-related Groups (Siegel, 1956) was used to test for pretest differences. Seven values differentiate significantly between experimental and control subjects. This is not considered a methodological problem, however; pretest equivalence between groups is not essential to the study since we are investigating differential treatment effects.

Change analyses. Table 4 shows F, D and Mach change means for experimental and control groups. Change means were tested using the t-test for correlated measures (Winer, 1962). Experimental subjects changed significantly on both F and Mach; neither group changed significantly on D.

Tables 5 and 6 show value change data for experimental and control group subjects. Experimental subjects changed downward significantly (de-emphasized) on the following values: a sense of accomplishment, equality, ambitious, and capable. One value, true friendship, increased in relative importance. Only one value--obedient--changed significantly for the control subjects.

Using the Fisher Exact Probability test (Siegel, 1956) we find that this difference between experimental and control groups in the number of value changes observed is significant beyond the .001 level.

DISCUSSION

The present research was designed to study belief system changes in student teachers through the use of social psychological measures. This approach has proven useful, since the changes observed seem to fit an intuitively logical pattern. Student teachers were significantly more authoritarian and more Machiavellian at the end of the 16-week student teaching experience. Their values changed in such a way as to indicate a de-emphasis of personal competency-type values (a sense of accomplishment, ambitious, capable) which, when considered in conjunction with F and Mach findings, suggest that the student teachers' belief systems changed in a direction that most educators would probably deem undesirable.

The upward change in authoritarianism is particularly interesting, in view of the comment made by Cook et al. (1951) suggesting that the authoritarian personality syndrome is a good operational definition of the "poor teacher." The findings of this study indicate that the student teaching experience tends to increase the level of authoritarianism in student teachers. Does this indict student teaching programs, or does it suggest that student teachers are unprepared to handle the classroom and therefore turn to authoritarian methods in order to gain control?

How should we interpret the findings concerning Machiavellianism? Christie and Geis (1970) warn against the usual perjorative connotations surrounding the term "Machiavellian." Even so, two factors of the Mach personality--aloofness in interpersonal relationships, and lack of concern with morality--should at least create concern among educators. Does the increase in Mach among the student teachers in this study carry favorable or unfavorable connotations? On the one hand, we might explain these data

as resulting from the realization by the student teachers that the classroom teacher is essentially a manipulator, and that his job demands Machiavellian tactics. On the other hand, we might also reasonably infer that the student teaching experience forces the students into a cool, aloof, amoral frame of mind.

Interestingly, the supervising teachers in this study--those to whom the student teachers were assigned--were, as a group, significantly less authoritarian, less Machiavellian, and more open-minded than the student teachers in this study. Does this suggest that the increases in F and Mach reported here are simply temporary defense mechanisms erected by the student teachers in response to the new situation they are confronting?

Dogmatism scores remained unchanged for the student teachers over the sixteen-week period. In light of the fact that open-mindedness has long been a purported goal of the teaching profession, does this imply that the student teaching experience should be modified so as to induce open-mindedness if possible?

Finally, how should we interpret the value-change data? Homant and Rokeach (1970) found that expressed rankings of values may correlate negatively with implied behavior, (e.g., the value honest, and cheating) thus suggesting some type of needs expression. Other values (Rokeach, 1971a) are related positively to logically-related behavior (e.g., the value equality, and civil rights activities). It would seem, however, that an actual decrease in ranking of a particular value would imply a lessening of relative importance, regardless of the initial ranking.

What meaning should we ascribe to the de-emphasis of personal competency values? It would be nice to say that as a result of their first

exposure to actual teaching, the student teachers in our study became less achievement-oriented and more concerned with the problems of their students. Somehow, when considered along with the F and Mach data, this conclusion seems inconsistent and implausible.

A more reasonable explanation would suggest that the student teachers came into the teaching experience in an idealistic state of mind, highly motivated and altruistic, burgeoning with the promise of a teaching career. At first they attempt to be democratic and try to suggest ideas in the classroom rather than force them upon their students. Gradually, they become frustrated and turn to more authoritarian and manipulative tactics. They find that these tactics work, but at the cost of their own identity.

It would appear that the effects, if not the intent, of Central Michigan University's student teaching experience are to graduate competency-based, rather than affectively-trained teachers. Are these two approaches mutually exclusive? Is it possible to design a teacher training program conducive to graduating teachers that are both achievement-oriented and sensitive to personal problems, or is this combination only a fortunate accident in a few teachers?

In summary, we feel that we have presented a beneficial and viable alternative approach to studying the teacher education process. As stated earlier, this research is only a preliminary investigation, attempting to recommend areas of concern for educators and researchers alike. Hopefully, we have raised many more questions than we have answered, and our findings should stimulate other researchers to study the changes in belief systems of student teachers in much greater depth and detail.

FOOTNOTES

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2. Requests for reprints should be sent to Dr. Jack Greenstein, Student Teaching Office, Central Michigan University, Mt. Pleasant, Michigan, 48858.

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TABLE 1

Pretest Means on Authoritarianism (F), Dogmatism (D), and Machiavellianism (Mach) for Experimental and Control Groups

		N	$\bar{x}$	s.d.	t[1]	p
F	Experimental	116	36.08	2.02	1.19	ns
	Control	56	36.87	2.71		
D	Experimental	116	65.75	12.39	1.47	ns
	Control	55	62.76	12.24		
Mach	Experimental	116	89.10	11.79	1.65	ns
	Control	55	85.73	13.63		

[1] *t*-test for independent samples.

TABLE 2

Pretest Terminal Value Medians and Composite Rank Orders for Experimental and Control Groups

Value	Control N=56 Median	Rank	Experimental N=117 Median	Rank	Median Test χ^2
A comfortable life	13.90	(14)	12.92	(14)	0.42
An exciting life	12.70	(13)	12.44	(12)	0.03
A sense of accomplishment	7.10	(6)	5.42	(1)	1.66
A world at peace	8.83	(11)	5.75	(2)	1.37
A world of beauty	11.50	(12)	12.88	(13)	1.09
Equality	7.83	(7)	7.44	(7)	0.26
Family security	5.70	(2)	9.20	(11)	2.33
Freedom	7.90	(8)	5.81	(3)	4.17*
Happiness	6.50	(5)	5.94	(4)	0.10
Inner harmony	4.79	(1)	7.20	(6)	3.05
Mature love	8.25	(10)	8.80	(10)	0.00
National security	16.17	(18)	15.35	(17)	1.62
Pleasure	14.63	(16)	14.13	(16)	0.28
Salvation	15.00	(17)	15.69	(18)	0.19
Self-respect	5.90	(3)	6.44	(5)	0.20
Social recognition	14.17	(15)	13.82	(15)	0.17
True friendship	6.33	(4)	7.67	(9)	0.73
Wisdom	8.10	(9)	7.63	(8)	0.01

* $p < .05$

TABLE 3

Pretest Instrumental Value Medians and Composite Rank Orders for Experimental and Control Groups

Value	Control N=56 Median	Rank	Experimental N=117 Median	Rank	Median Test χ^2
Ambitious	9.50	(9)	6.60	(4)	4.65*
Broadminded	6.00	(4)	5.25	(2)	0.09
Capable	8.90	(7)	8.56	(10)	0.00
Cheerful	10.50	(12)	8.42	(7)	1.13
Clean	15.21	(17)	14.25	(17)	0.09
Courageous	10.21	(10)	12.38	(14)	4.49*
Forgiving	5.30	(3)	7.86	(5)	5.69*
Helpful	6.64	(5)	8.54	(8)	3.01
Honest	4.17	(1)	4.95	(1)	0.13
Imaginative	11.83	(13)	10.44	(12)	0.42
Independent	10.50	(11)	8.59	(11)	5.61*
Intellectual	13.50	(16)	11.89	(13)	0.41
Logical	12.50	(14)	12.42	(15)	0.01
Loving	4.25	(2)	8.00	(6)	4.35*
Obedient	16.60	(18)	16.36	(18)	0.10
Polite	13.39	(15)	13.65	(16)	0.51
Responsible	6.90	(6)	5.63	(3)	4.64*
Self-controlled	9.00	(8)	8.56	(9)	0.27

* $p < .05$

TABLE 4

Authoritarianism (F), Machiavellianism (Mach) and Dogmatism (D) Changes for Experimental and Control Groups

		N	Pretest $\bar{x}$	Pretest s.d.	Posttest $\bar{x}$	Posttest s.d.	Change $\bar{x}$	p[1]
F	Experimental	102	35.83	8.35	37.70	8.41	+1.87	<.02
	Control	49	37.59	9.18	37.49	8.29	-.10	ns
Mach	Experimental	103	89.00	12.18	93.00	13.53	+4.00	<.001
	Control	48	85.85	14.27	88.59	13.44	+2.74	ns
D	Experimental	103	66.21	12.52	66.05	11.69	-.16	ns
	Control	48	64.04	12.20	64.92	12.10	+.88	ns

[1] *t*-test for correlated measures.

TABLE 5

Mean Changes in Terminal Values for Experimental and Control Groups

Value	Experimental N = 104	Control N = 49
A comfortable life	.10	-.35
An exciting life	.71	-.92
A sense of accomp.	-1.18*	-1.12
A world at peace	-.59	.88
A world of beauty	.52	.04
Equality	-1.07*	-.26
Family security	-.28	-.10
Freedom	-.29	.78
Happiness	.11	-.02
Inner harmony	.71	1.14
Mature love	.08	-.51
National security	-.49	.47
Pleasure	.45	.37
Salvation	.72	.37
Self respect	.54	.06
Social recognition	-.45	-.49
True friendship	.89**	-.04
Wisdom	-.48	-.29

* $p < .05$, ** $p < .01$ t-test for correlated measures.

TABLE 6

Mean Changes in Instrumental Values for Experimental and Control Groups

Value	Experimental N = 100	Control N = 49
Ambitious	-.98*	.04
Broadminded	-.22	.88
Capable	-1.31*	-.35
Cheerful	.06	.04
Clean	-.69	-.14
Courageous	.87	-.33
Forgiving	.01	-.29
Helpful	=.10	-1.18
Honest	.10	.61
Imaginative	.11	-.33
Independent	.64	.18
Intellectual	.31	.65
Logical	.18	.06
Loving	.79	-1.29
Obedient	.29	1.57*
Polite	.32	.31
Responsible	-.68	-.08
Self controlled	.30	-.37

* $p < .05$, ** $p < .01$ t-test for correlated measures.